

## CLAIMS

What is claimed is:

1. A method for configuring a prefetch buffer, comprising:  
receiving a read request from a master; and  
5 in response to the read request, selectively modifying a line size  
of at least a portion of the prefetch buffer based on an  
attribute of the read request.
2. The method of claim 1, wherein the attribute of the read request  
10 comprises one of a master identifier corresponding to the master, a  
data size of the read request, and a burst length of the read request.
3. The method of claim 2, wherein selectively modifying the line  
size is based on a second attribute of the read request, wherein the  
15 second attribute comprises another one of the master identifier, the  
data size, and the burst length.
4. The method of claim 1, wherein the read request results in a miss  
in the prefetch buffer.  
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5. The method of claim 1, wherein the prefetch buffer includes a  
plurality of lines, each of the plurality of lines having a  
corresponding one of status fields.
- 25 6. The method of claim 5, further comprising:  
selecting at least a portion of the plurality of lines as a  
replacement entry within the prefetch buffer based on the  
status fields of the prefetch buffer.

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7. The method of claim 6, wherein each of the status fields comprise an address tag field, an invalid field to indicate that a corresponding line in the prefetch buffer is not valid, a used field to indicate that a corresponding line in the prefetch buffer has been provided in response to a previous burst read request, and a valid field to indicate a corresponding line in the prefetch buffer has been provided in response to a previous non-burst read request.
8. The method of claim 6, wherein selectively modifying the line size comprises selectively modifying a line size of the replacement entry.
9. The method of claim 8, wherein selectively modifying the line size of the replacement entry comprises selectively modifying a status field corresponding to the replacement entry.
10. The method of claim 9, wherein selectively modifying the status field corresponding to the replacement entry is based on the attribute of the read request, the attribute comprising at least one of a data size and a burst length of the read request.
11. The method of claim 10, further comprising:  
determining a number of data requests to a memory addressed by the read request based on a bus width of a bus interfacing with the memory; and

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determining a size of the data requests to the memory based on the data size corresponding to the read request and on the status field of the replacement entry.

5    12.    The method of claim 11, further comprising:  
generating the data requests to the memory; and  
storing data from the memory into the replacement entry of the  
prefetch buffer.

10    13.    The method of claim 10, further comprising:  
generating at least one data request to a memory addressed by  
the read request; and  
storing data from the memory into the replacement entry of the  
prefetch buffer.

15    14.    A method for configuring a prefetch buffer, comprising:  
receiving a read request to a memory from a requesting master,  
the read request having a corresponding data size and burst  
length;

20    providing a prefetch buffer reconfiguration indicator based on  
the data size and the burst length;  
selecting a replacement entry within the prefetch buffer;  
based on the prefetch buffer reconfiguration indicator,  
selectively modifying a line size of the replacement entry;

25    and  
storing data fetched from the memory in the replacement entry.

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15. The method of claim 14, wherein the prefetch buffer reconfiguration indicator is based on the data size, the burst length, and a master identifier corresponding to the requesting master.
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16. The method of claim 14, wherein selectively modifying the line size of the replacement entry comprises selectively modifying at least one status field corresponding to the replacement entry.
- 10 17. The method of claim 16, wherein the at least one status field comprises an address tag field, wherein selectively modifying the at least one status field comprises selectively modifying the address tag field.
- 15 18. The method of claim 14, wherein selecting the replacement entry within the prefetch buffer comprises checking at least one of valid, invalid, or used bits within status fields of the prefetch buffer.
- 20 19. The method of claim 14, further comprising:  
generating at least one data fetch request to the memory, wherein  
the at least one data fetch request is based on a bus width  
corresponding to the memory.
- 25 20. A data processing system, comprising:  
a master;  
a memory;

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a prefetch buffer, coupled to the master and the memory, the  
prefetch buffer having a plurality of lines; and  
prefetch control circuitry coupled to the prefetch buffer, the  
prefetch control circuitry, in response to a read request from  
5 the master, selectively modifying a line size of at least a  
portion of the prefetch buffer.

21. The data processing system of claim 20, wherein the prefetch  
control circuitry selects a replacement entry within the prefetch  
10 buffer, and selectively modifying the line size comprises  
selectively modifying a line size of the replacement entry.

22. The data processing system of claim 21, wherein the prefetch  
control circuitry receives a data size indicator and a burst length  
15 indicator from the master and selectively modifies the line size of  
the replacement entry based on the data size indicator and the  
burst length indicator.

23. The data processing system of claim 20, wherein the prefetch  
20 buffer comprises a plurality of lines and status fields, each of the  
plurality of lines having a corresponding one of the status fields.

24. The data processing system of claim 23, wherein each of the status  
fields comprise an address tag field, an invalid field to indicate  
25 that a corresponding line in the prefetch buffer is not valid, a used  
field to indicate that a corresponding line in the prefetch buffer  
has been provided in response to a previous burst read request,  
and a valid field to indicate a corresponding line in the prefetch

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buffer has been provided in response to a previous non-burst read request.